mFUND
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TrilaWatt

Federal Waterways Engineering and Research Institute (BAW)
smile consult GmbH
Wadden Sea Forum
PlanGIS GmbH

# TrilaWatt

## Digital hydro-morphological twin of the Trilateral Wadden Sea

Wadden Sea Forum – 44th Plenary Meeting

Jever, Germany, 7th September 2023

# Research Objective and Work Packages

Research objective:

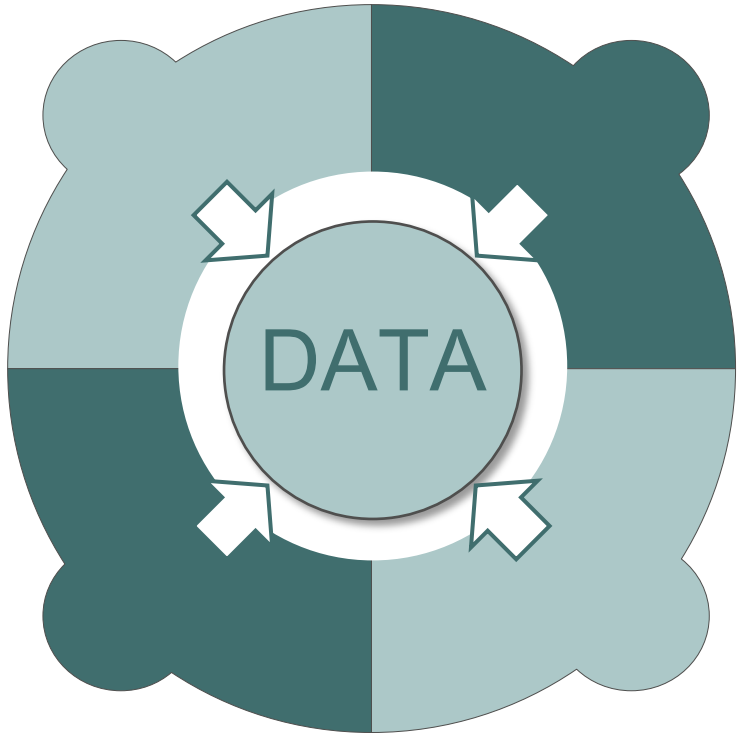
Our goal is the synthesis of scattered data (A-C) in the Trilateral Wadden Sea area to reliable, high-resolution data products for research, consulting, and governmental policy decision in the period of 2000 to 2020.

## (A) Geomorphology

Consistent, annual high-resolution bathymetry data.

## (B) Surface Sediments

Information about likely surface sediments using sediment samples and numerical modeling.




## (C) Physical Oceanography

Numerical simulations of the entire North Sea to describe tides, salinity, heat flux, and sediment transport.

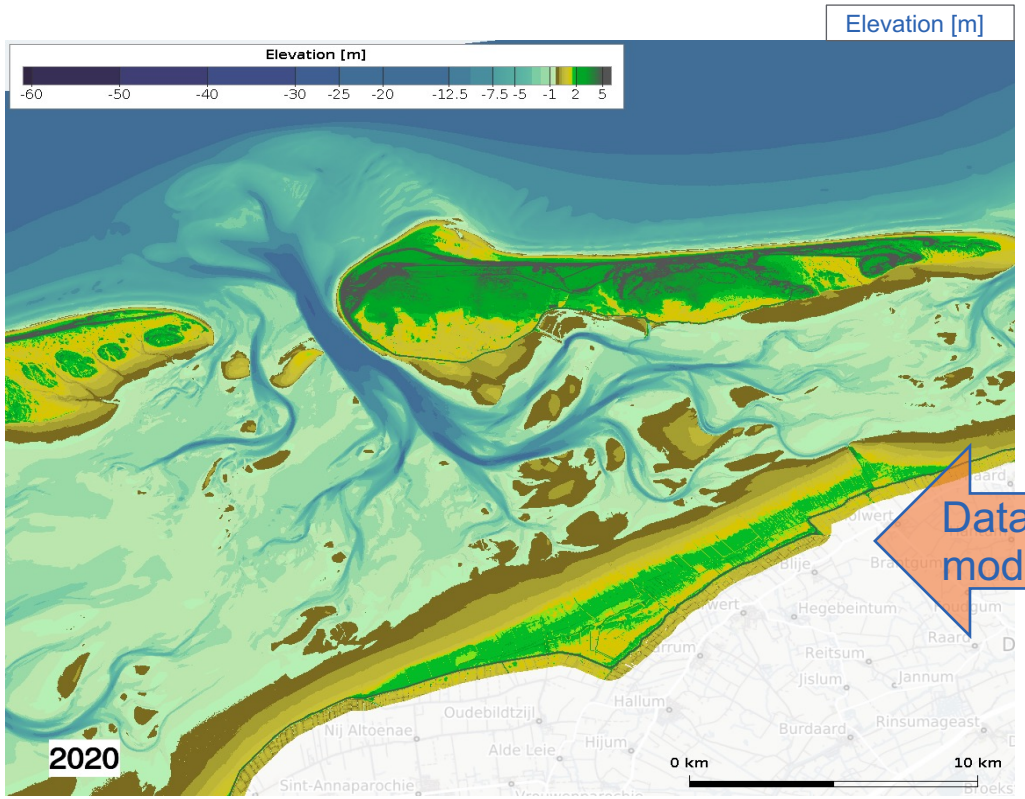
## (D) Interactive Webviewer

Enabling users from different background to move efficiently through our big data collection.

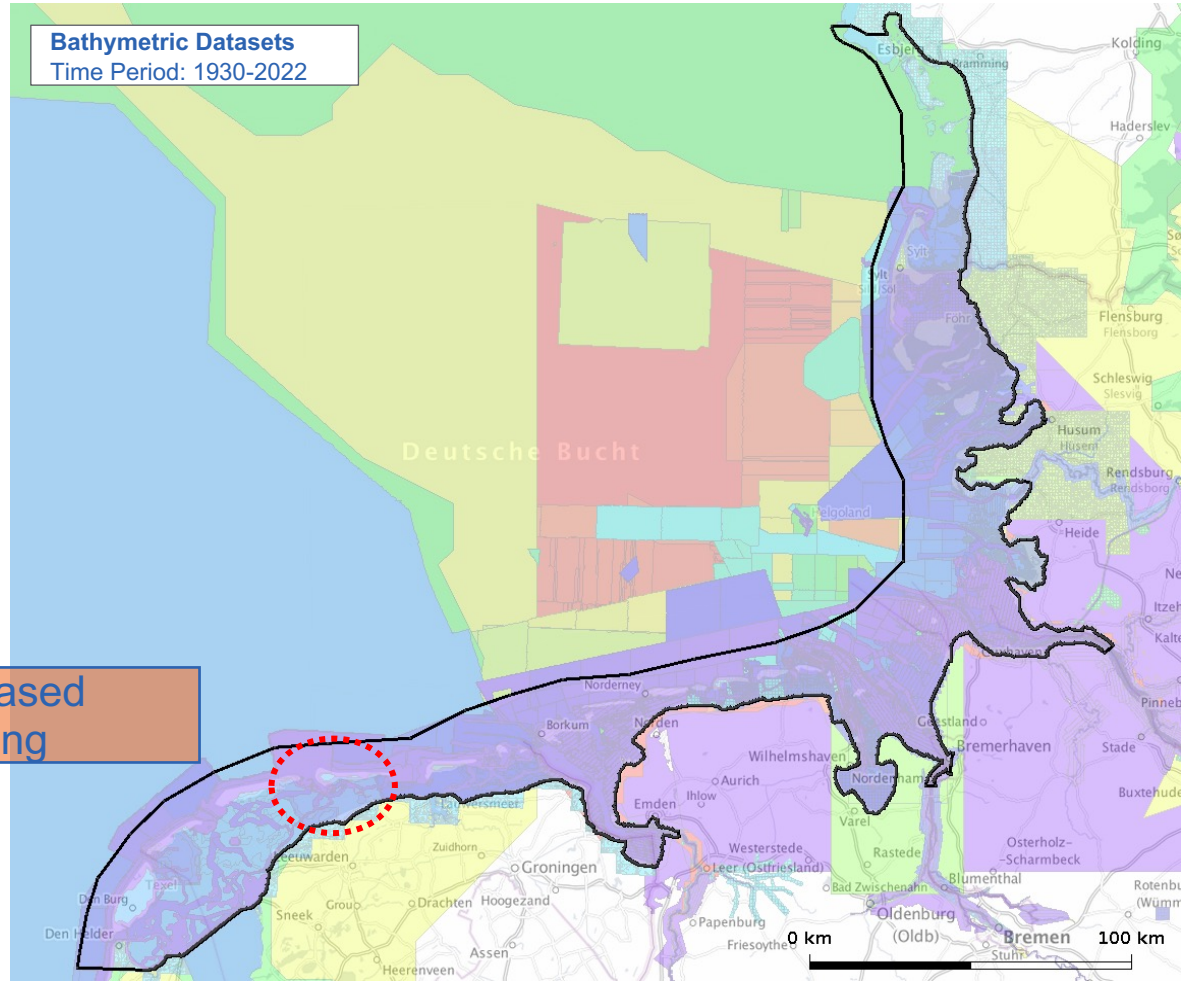
# Status on Data: Coverage of the bathymetric data collected up to date

- From 144,000 to currently ~160.000 bathymetric surveys and Open-Source products intended as final product with elevation data)
- Up to date insufficient data covering the Danish

Wadden Sea area obtained.




Data-based modelling

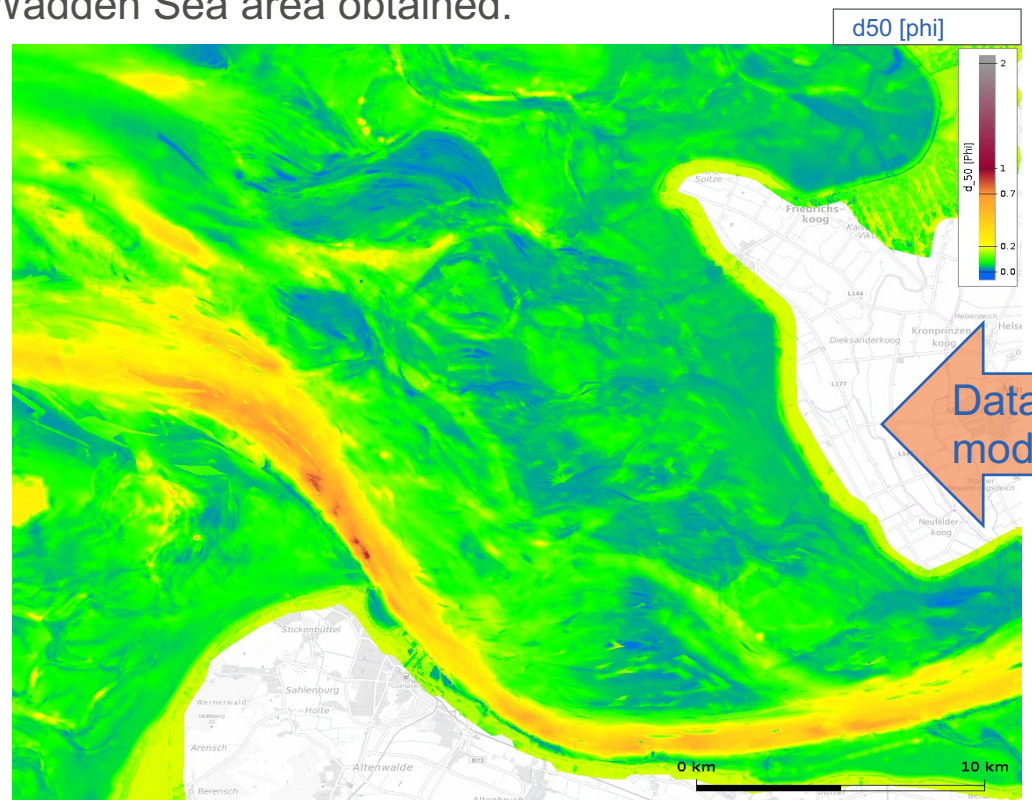



Source: Smile Consult GmbH

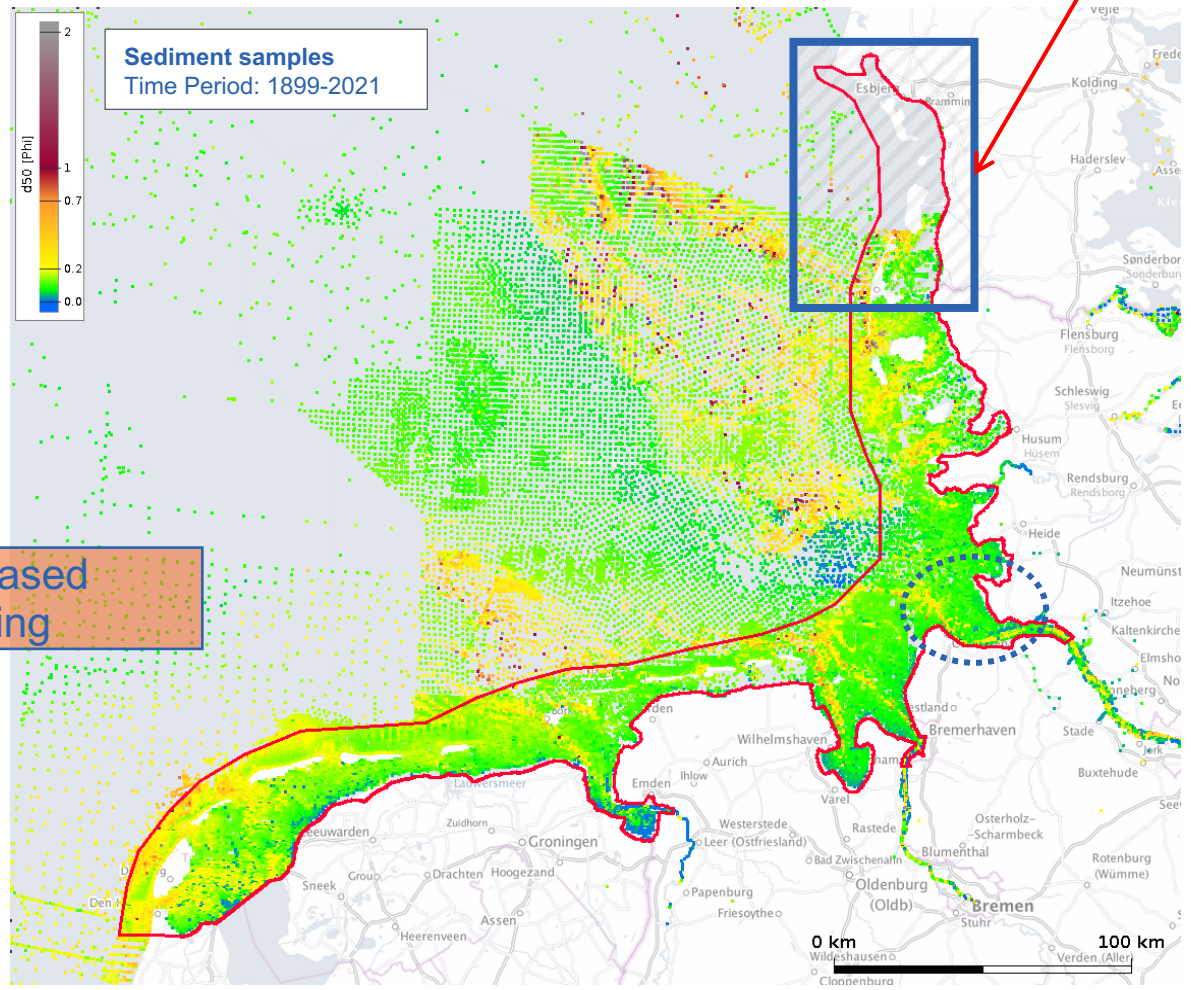
# Status on Data: Coverage of the Sediment data collected up to date

- From 45,000 to currently ~ 65,000 surface sediment samples collected for the project area.

- Up to date insufficient data covering the Danish Wadden Sea area obtained.




Data-based modelling

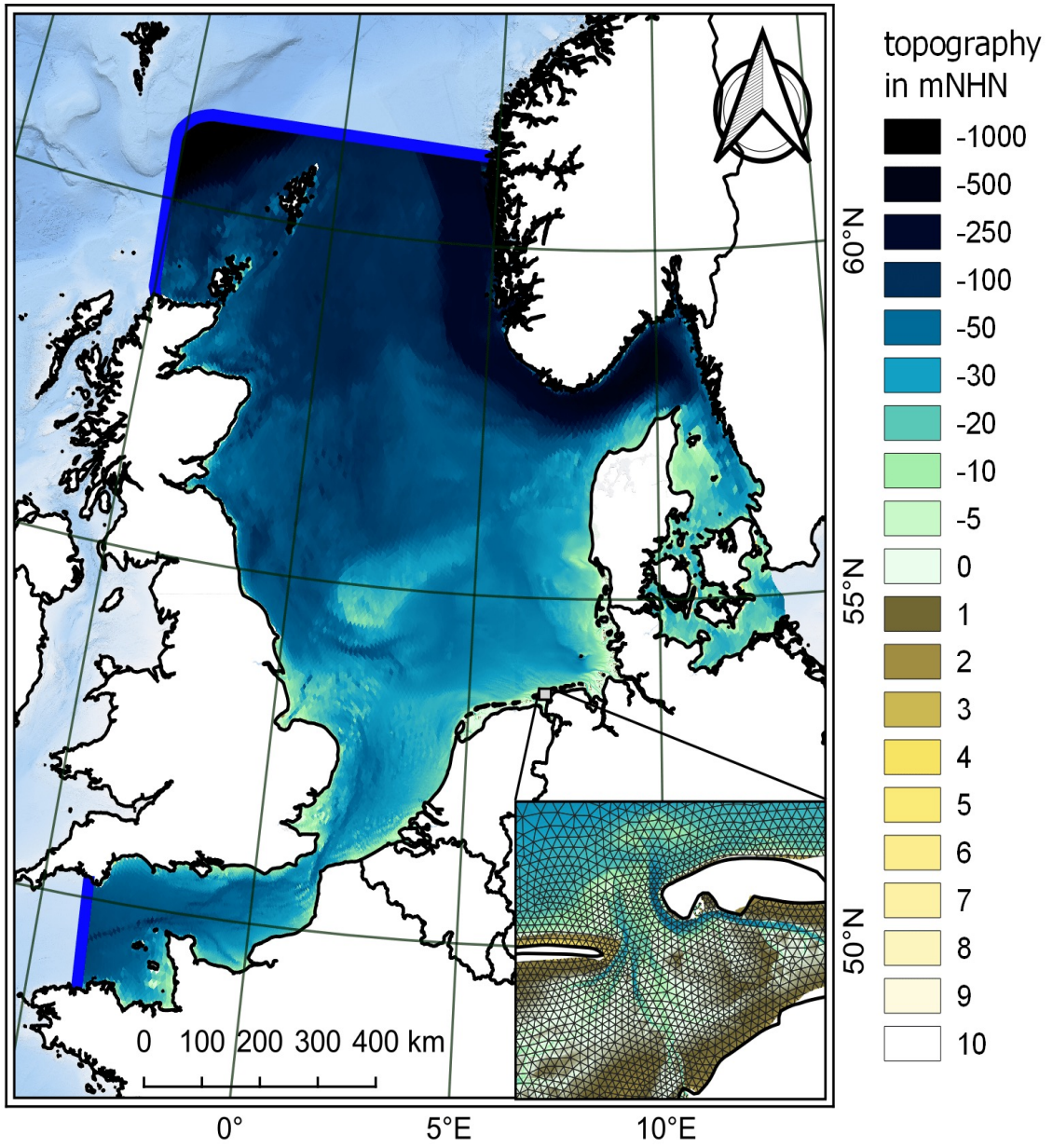



Source: Smile Consult GmbH

# Status on Data and Modelling (BAW –

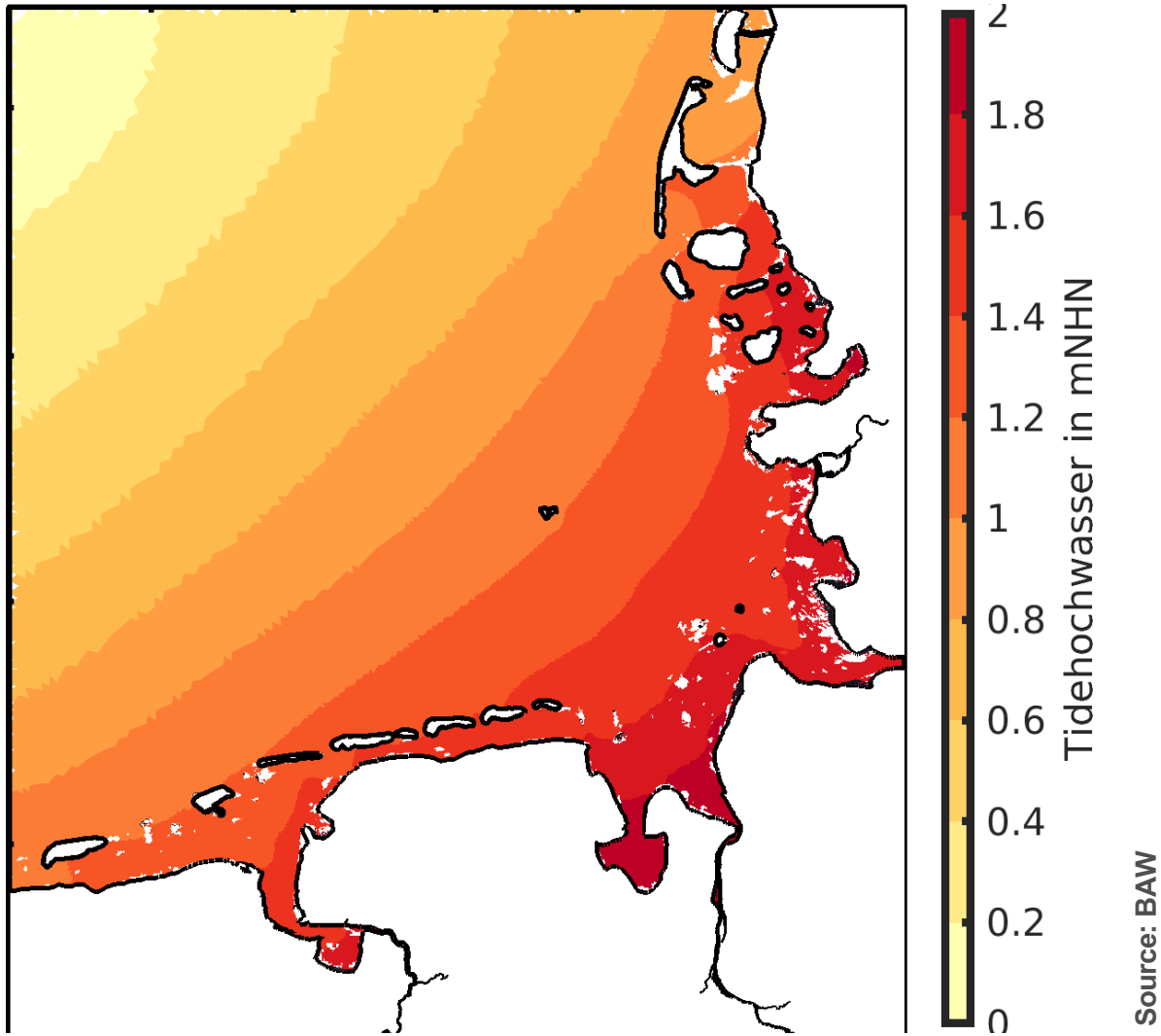
Numerical model is set up and calibrated for the year 2020

- We are currently putting the finishing touches on the model
- Next steps are wave and sediment transport modeling
- First products for 2020 will be available by the end of the year

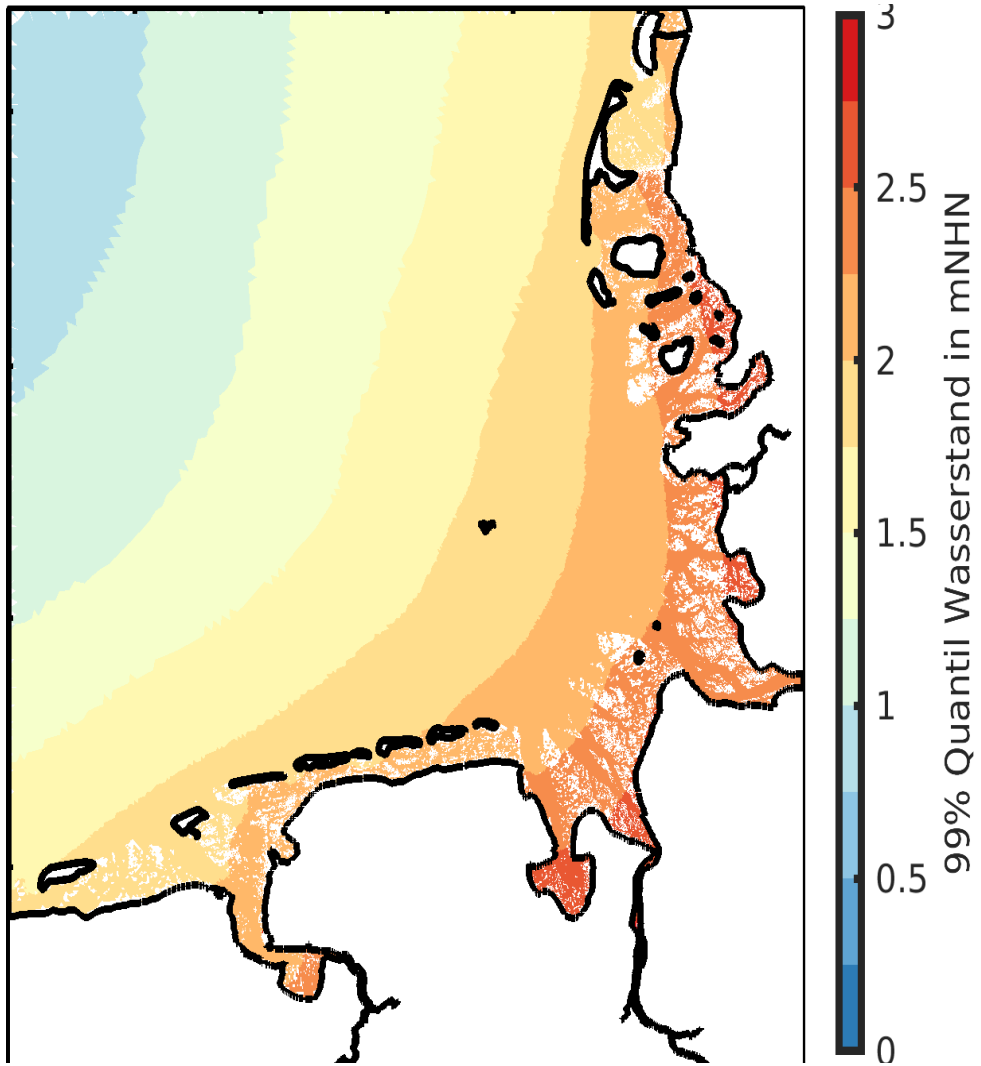



Source : BAW

# Status on Data and Modelling (BAW)




Source: BAW

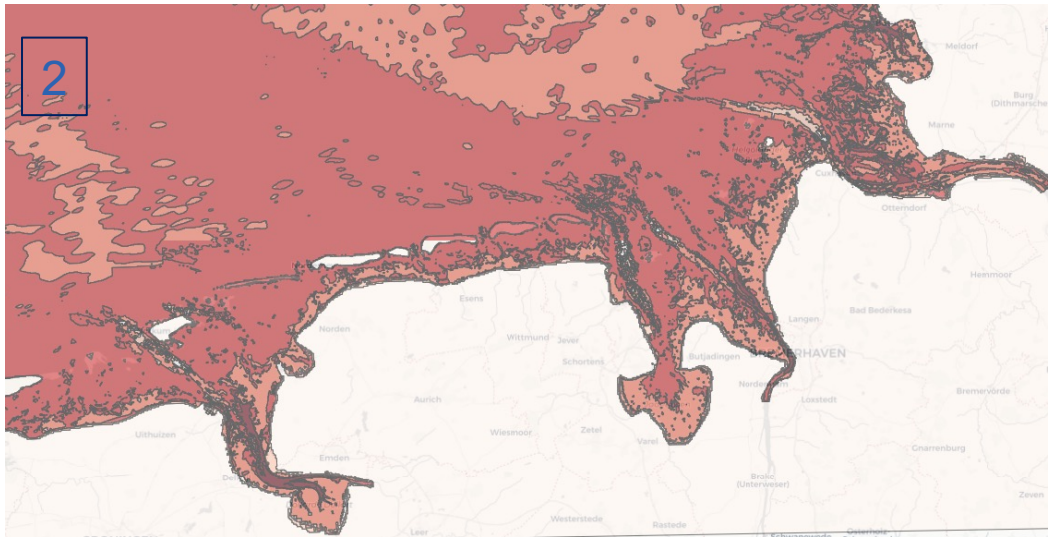


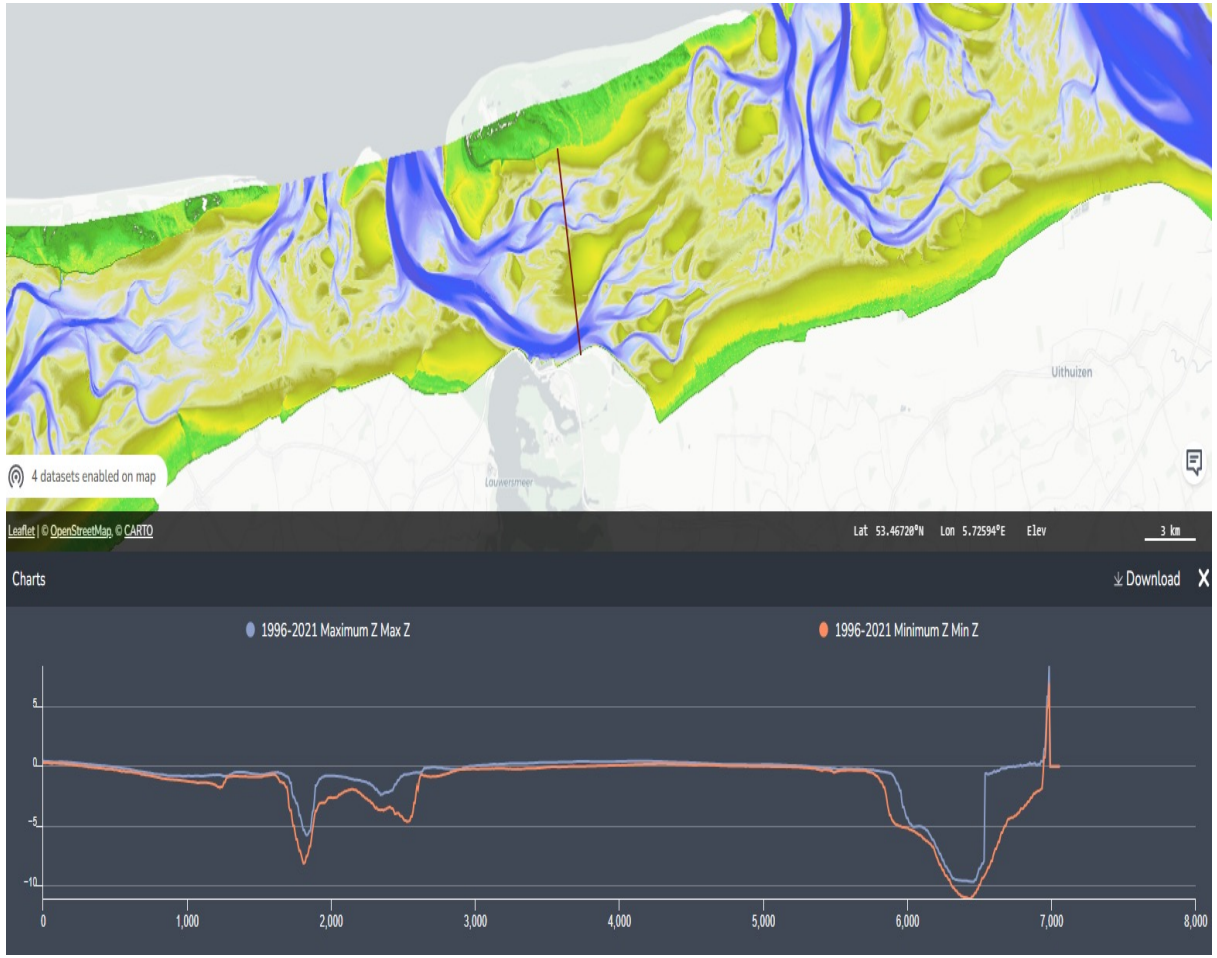

Source : BAW

# Status on Data Infrastructure

## Recent changes to the TrilaWatt Map viewer 1

- Prototype Web Processing (WPS) functions:
  1. Depth profile creation of several water depth datasets
  2. Mussel potential map prototype generation with process chaining



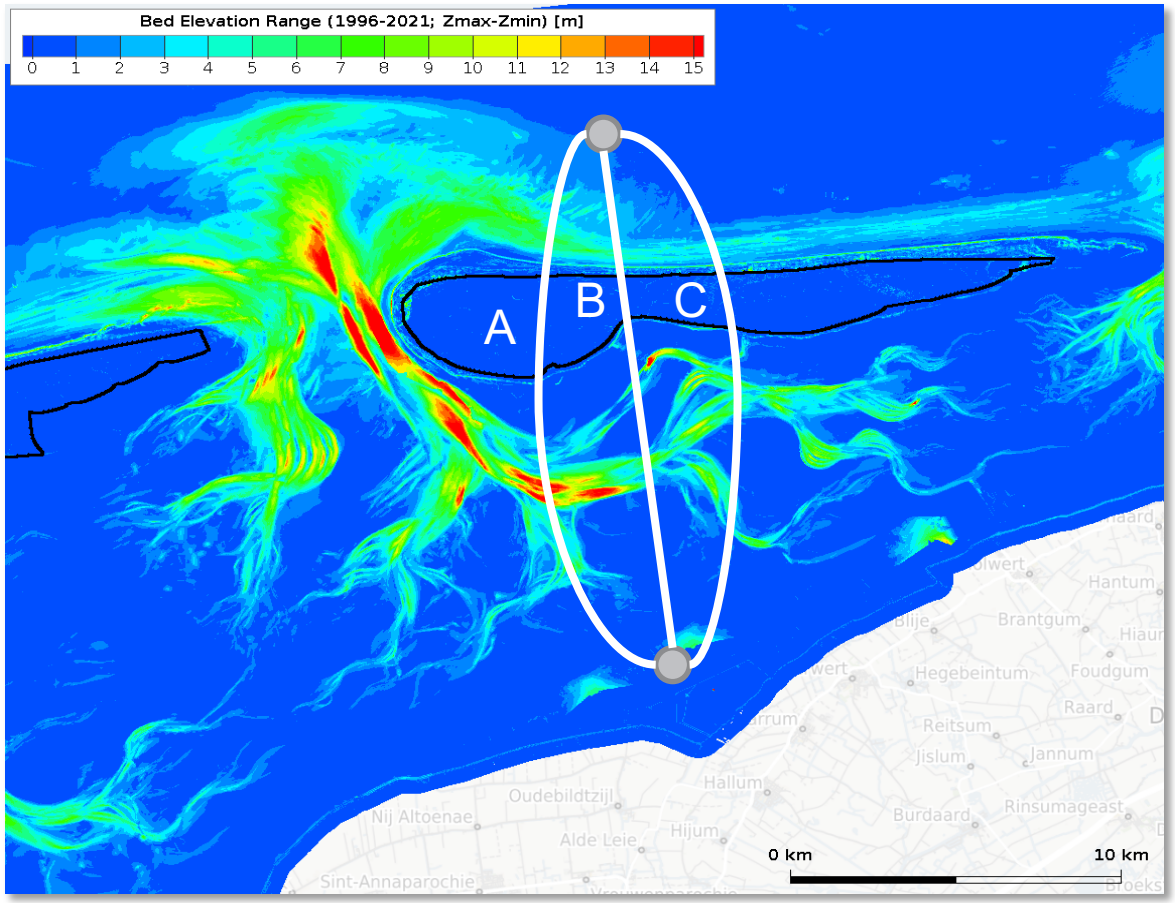




Source: planGIS

# Use-Case: Cable Routing

- Cable routing remains a challenge and will only increase in relevance!
  - Offshore (wind) energy?
  - Water supply?
  - Hydrogen?

- Why is it difficult to determine?
  - Ecological habitats
  - Anthropogenic influences
  - Natural morphodynamics




Source: Smile Consult GmbH

# TrilaWatt Map Viewer new Features

1. **Max – Min Z profile 1996 – 2021**

2. **Mussel Potential Maps**

**Map Viewer https ://app.trilawatt.eu/viewer/**

# Use-cases / Pilot case studies

List of Current use-cases ;

1. Sediment management, - on hold until results are there
2. cable routes - currently in progress
3. habitat calculator - prototype ready to be tested
4. Maritime Strategy Framework Directive reports - next meeting scheduled

# END

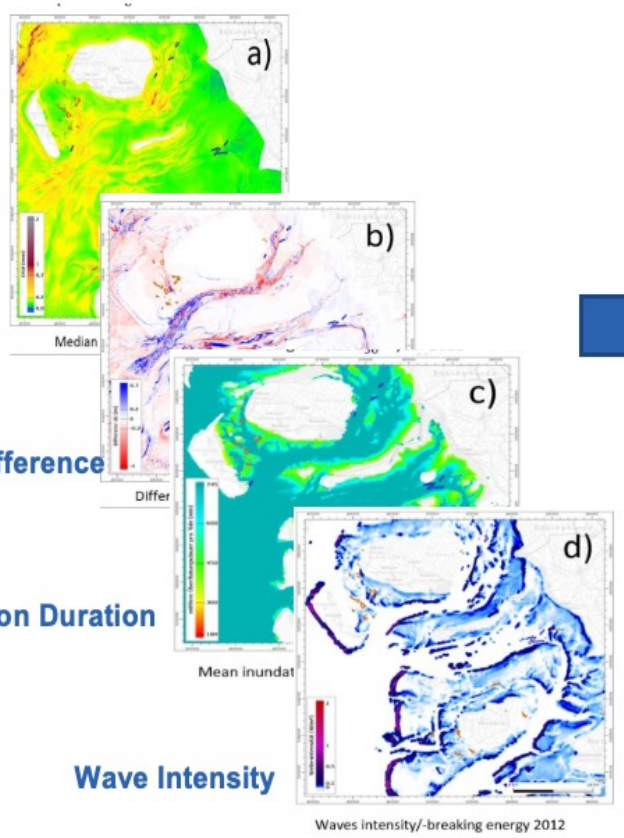
Thank You

# TrilaWatt Application : Habitat Identification

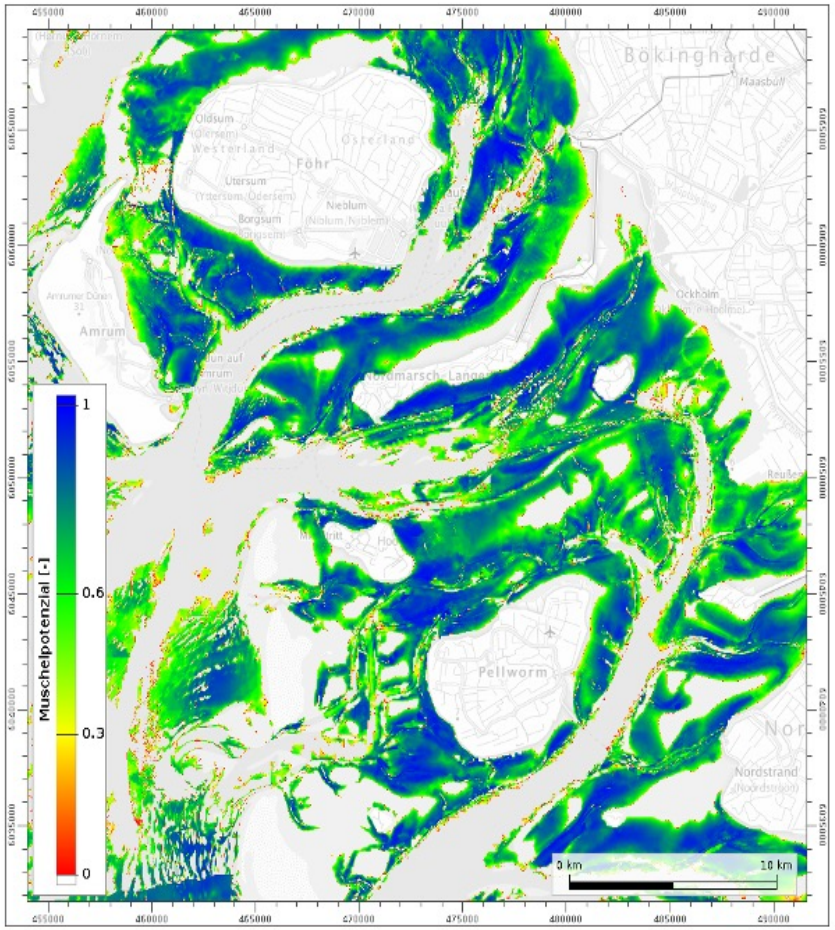
## Planning

Objectives
+
Data Gaps


## Data Evaluation




## Habitat Identification

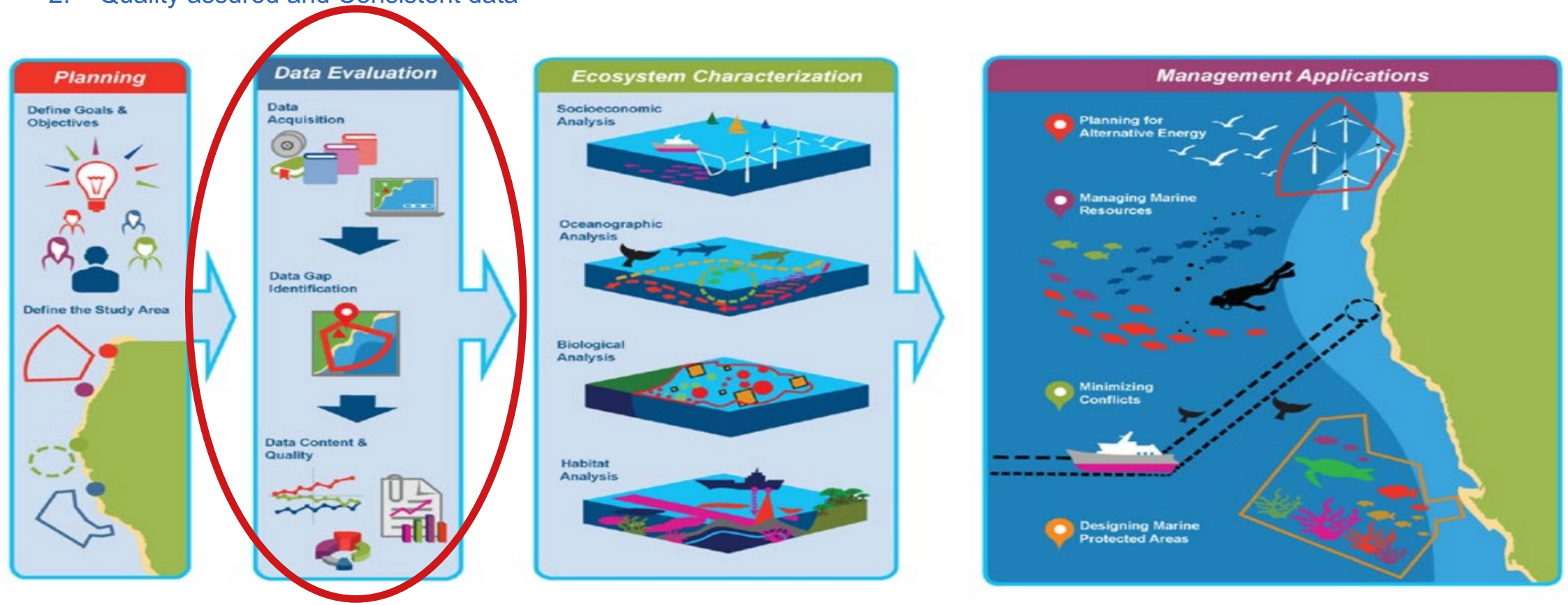



Source: EasyGSH-DB Final Scientific Report

# TrilaWatt Application : A Tool To support Marine Spatial Planning

## The assistance systems that facilitates:

1. Planning procedures for the development of Offshore Projects
2. Quality assured and Consistent data




*Source : O'Hagan, Anne Marie. 2020 State of the Science Report, Chapter 11: Marine Spatial Planning and Marine Renewable Energy. United States: N. p., 2020. Web. doi:10.2172/1633204.*